

Footwear with a sealed sole construction and process
for its production

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FIELD OF THE INVENTION Filed 5/8/00.

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10 The invention relates to footwear with an upper, which is provided at least partially with a waterproof functional layer which is preferably water-vapor permeable, and with an outsole, in particular a cemented-on outsole. The invention also relates to a process for the production of such a shoe.

TECHNICAL BACKGROUND

15 There are shoes whose shoe upper is waterproof and water-vapor permeable because it is lined with a functional layer. A shoe upper of this type remains breathable in spite of being waterproof. Special efforts are required to ensure permanent waterproofness
20 in the region between the end of the upper on the sole side and the sole construction.

To achieve this, sock-like inserts, also known among those skilled in the art as booties, have been used between the upper and the sole construction on the
25 one hand and an inner lining on the other hand. Since such booties are shaped by fusing together cut-to-size parts, they need not have any stitching holes. However, the use of booties is quite costly in production if the booties are to correspond to some extent to the shape
30 of the respective shoe.

Another known method is to use outsole material of a molded-on outsole to seal the lower region of the shoe construction, and consequently the lower region of the upper lined with the functional layer and possibly
35 sewn to an insole. This cannot, however, prevent water from reaching the end of the upper on the sole side, and consequently the end of the functional layer on the sole side, on the outer material of the upper, which generally conducts water by capillary effects, and

Figure 20 shows a plan view from below of a functional layer part with an elastic string-lasting at a functional-layer end region on the sole side in the relaxed state;

5 Figure 21 shows a plan view from below of the functional layer part shown in Figure 20 with tensioned elastic string-lasting;

Figures 22-25 show a thirteenth embodiment of the invention in a fourth production phase; and

10 Figures 26-30 show a fourteenth embodiment of the invention in six different production phases.

DESCRIPTION OF EMBODIMENTS OF THE INVENTION

15 The terms vertical and horizontal are used here for describing the position of individual shoe components. This relates to the representations in the figures and corresponds to the idea that in most cases shoes are located with their outsole on a horizontal
20 floor or other type of horizontal underlying surface.

Figure 1 shows in a highly schematized cross-sectional representation a first embodiment of a shoe according to the invention, with an upper 11, which is constructed with an outer material 13 and a functional
25 layer 15 lining the inner side of the latter. The functional layer 15 may be part of a functional-layer laminate, which has the functional layer and a lining layer on the inner side of the latter. Furthermore, the functional layer 15 may be provided with a textile
30 backing (not represented) on its outer side facing the outer material 13. There are also embodiments in which the functional layer and the lining are separate layers of material.

Furthermore, Figure 1 shows an insole 17 and a
35 dish-like, prefabricated outsole 19, which is constructed with rubber and/or plastic. The outer material 13 and the functional layer 15 have an outer-material end region 21 or functional-layer end region 23 ending vertically, i.e. perpendicular to the tread

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